National Aeronautics and
Space Administration

Headquarters
Washington, DC 20546-0001

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Reply to Attn of: Office of Legislative Affairs
KP:tg

MEMORANDUM FOR THE RECORD

Subject: Hearing before the House Science Committee Regarding K-12 Science and Math Education Across Federal Agencies; March 30, 2006.

Members Present: See Attached

Witnesses:

- **Ms. Margaret Spellings**, Secretary, U.S. Department of Education
- **Dr. Arden Bement**, Director, National Science Foundation
- **Ms. Shana Dale,** Deputy Administrator, National Aeronautics and Space Administration
- **Brigadier General John J. Kelly**, Deputy Undersecretary of Commerce for Oceans and Atmosphere, National Oceanic and Atmospheric Administration
- **Dr. James Decker**, Principal Deputy Director, Office of Science, U.S. Department of Energy

Hearing Summary:

On March 30 2006, the House Science Committee held a hearing on K-12 Science and Math Education across the Federal Agencies. Deputy Administrator Dale testified on behalf of NASA and was joined by representatives from the U.S. Department of Education (DoED), National Science Foundation (NSF), National Oceanic and Atmospheric Administration (NOAA) and U.S. Department of Energy (DoE). Members' questions primarily focused on how these agencies can improve their individual and collective efforts to strengthen K-12 science and math education in the U.S. In addition, Members stressed the need for cooperation and coordination at the federal level to ensure programs are effectively evaluated and implemented in ways that reach diverse student populations. Members also asked about plans for attracting scientific and technical professionals into the teaching profession and ensuring that present day educators receive in-service and advanced training in math and science. Deputy Administrator Dale noted that while NASA's primary mission is not education, the Agency is committed to strengthening the health of the Nation's science and math education system to ensure the success of the Vision for Space Exploration.

Summary of Member Opening Statements:

Chairman Boehlert (R-NY) opened by hailing the hearing as a historic event whereby all of the federal agencies with primary responsibility for science and math education appeared together before Congress. Boehlert said that each of the agencies play an important and unique role in science and math education and it is important to avoid a single-minded approach to education. However, Boehlert noted that agencies need to coordinate their efforts and work together to improve the way their programs are evaluated. Boehlert stressed that K-12 science and math education is the key to the nation's future prosperity and an issue of national security. He said the Committee is in the process of developing and reporting legislation aimed at strengthening education programs and attracting top students and professionals into becoming math and science teachers. Boehlert concluded by praising NSF's education programs, pointing out that it will take more money and new ideas to reach out to students and reaffirmed the Committee's commitment to science and math education.

Ranking Democrat Gordon (D-TN) said he endorsed the Chairman's remarks, adding that the Augustine Report captures the criticality of STEM education for the nation's future well-being and that he strongly agrees with this key recommendation and the need to improve the training and professional development of teachers. He also felt the Administration needs to increase funding for STEM initiatives and that the NSF should play a more significant role. Gordon added that it was imperative that any new money be spent on programs that have been properly evaluated and proven to work.

Summary of Opening Statements from Additional Witnesses:

Secretary Spellings (DoED) said that U.S. students are currently unprepared and that we must move forward with math and science education so they can develop critical problem solving skills the modern-day workforce requires. She said the President's American Competitiveness Initiative (ACI) will build on No Child Left Behind and increase academic competence across the board and get students to grade level by 2014. Spellings concluded by highlighting the need for clear goals and effective cooperation among agencies, local officials and teachers to get the best results.

Dr. Bement (NSF) began by announcing a proposed realignment of NSF's Education and Human Resources Directorate to improve the working relationship between their programs. In addition to highlighting several of NSF's programs/initiatives, Bement said that NSF's goal is to strike a balance in order to support students from all socio-economic and academic backgrounds.

Gen. Kelly (NOAA) said that as a science mission agency, it is essential that the NOAA have access to a diverse pool of highly educated scientists. Thus, NOAA's goal is to educate students and provide professional development in the oceanic and atmospheric sciences. Gen. Kelly added that NOAA is focusing on the Augustine Report and is working to develop performance measures and improved coordination/collaboration with other agencies. Finally, he noted that the best way to ensure the nation's scientific leadership is to inspire young students and provide them with opportunities to pursue science careers.

Dr. Decker (DoE) began with an anecdote about *Sputnik's* influence on why he and many of his contemporaries were compelled to choose a career in science. Decker noted that the DoE is very concerned about replacing their aging workforce and the pipeline that produces the talent to fill those needs. He said that Energy's primary contribution to this pipeline is through the support and training of graduate students, but there are also programs directly supporting STEM education. Decker

explained how these programs use the Department's scientists and labs to engage teachers and connect them with the principles they teach, adding that NSF has joined in supporting these programs and they are eager to continue with their effort to inspire students to become more interested in STEM.

Summary of Major Discussions/Questions:

Chairman Boehlert (R-NY) asked the witnesses to comment on why their agencies were in the "education business." Bement responded the future of science depended on a well-educated workforce, and NSF has a responsibility to be involved in STEM education as directed through the American Competitiveness Initiative (ACI). Dale noted that NASA's workforce is nearing retirement, so the Agency needs a strong pipeline of students in STEM fields who will be able to support future missions. Dale also referenced the Agency's unique ability to inspire children to enter STEM fields, citing the Apollo program and, currently, the New Horizons mission which carried the fist student-built instrument on a planetary mission as examples. Kelly responded that NOAA has "real science needs," and that both their formal and informal education efforts are geared at creating an educated public. Decker responded that workforce needs were the primary driver for DOE's education efforts.

Ranking Democrat Gordon (D-TN) expressed concern about teachers who do not have the necessary educational backgrounds or certifications required to effectively teach math and science. He commented that he believes the ACI is under funded and perhaps not properly prioritized. He also questioned why such a large amount of money was being proposed solely for the development of math curricula. Spellings responded that the Administration has called for improvements in advanced placement courses, and there is an increased attention to math curriculum because there is currently not a strong research base for the development of math products. She also noted that subject funding is used for teacher training.

Congressman Ehlers (R-MI) asked Spellings if her department could help develop standards in teacher training and class sequence. Spellings responded that No Child Left Behind (NCLB) is helping address many of the standards in need of uniformity, but that effort must be led by state and local officials. She also advocated the use of STEM professionals as instructors in classrooms, asking "why can't a NASA scientist teach in our schools?"

Ehlers then asked each witness how their agency's education programs address diverse student populations. Kelly responded that NOAA programs are designed to attract diversity. Dale noted that NASA conducts extensive evaluations of its programs and also collects best practices. She added that while NASA's undergraduate and graduate level research programs target the "best and brightest," there are also outreach programs such as Explorer Schools and the Motivating Undergraduates in Science and Technology (MUST) Program that target underrepresented populations. Bement responded that NSF's Advanced Placement program helps create a balance among various demographics. Spellings concluded by saying that striking a balance among diverse student populations is central to NCLB.

Congresswoman Hooley (D-OR) questioned why math and science curricula seem to no longer have an "exploratory aspect" and asked what needs to be done to recruit and train science teachers. Spellings responded that typically curriculum development is a state-level decision. Dale commented that teacher training would be a long-term effort and supports actively pursuing retirees to become teachers.

Congressman Reichert (R-WA) questioned whether scientists who go into the classroom need to undergo specific training. Spellings responded "yes," but added that content was still more important than pedagogy.

Congressman McCaul (R-TX) commented that he recently met with the President who commended Spelling's efforts. He also explained how Advanced Placement courses had resulted in significant improvements in college entrance and performance in Texas, particularly among minority students. He referenced the success of the UTeach program at the University of Texas at Austin, and advocated increased private sector investment and involvement in public schools.

Congresswoman Woolsey (D-CA) commended Spellings and asked for continued attention to early-childhood education, as well as NCLB. She then questioned whether there is something lacking in terms of training to make scientists-turned-teachers effective. She then advocated more opportunities for teachers to learn through science-related travel experiences. Bement and Kelly commented that NSF and NOAA make these kinds of opportunities available to teachers.

The hearing concluded with **Congressman Miller (D-NC)** making several requests to Spellings for the release of reports that included critiques and criticisms of charter school performance, bi-lingual education, and research labs, asking why they had not been released previously. Spellings responded that she was not familiar with the reports in question, but that she would investigate each of the reports and get back to the Congressman, as appropriate.

Copies of NASA testimony and Hearing summaries can be found at the NASA Office of Legislative Affairs website at http://legislative.nasa.gov/. Copies of other witnesses opening statements can be found on the House Science Committee website at http://www.house.gov/science/.

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Attachment

Members Present at the March 30, 2006,
Hearing Regarding K-12 Science and Math Education

REPUBLICANS	DEMOCRATS
SHERWOOD L. BOEHLERT (R-NY) *CHAIRMAN*	BART GORDON (D-TN) *RANKING MEMBER*
RALPH M. HALL (R-TX)	LYNN WOOLSEY (D-CA)
DANA ROHRABACHER (R-CA)	DARLENE HOOLEY (D-OR)
ROSCOE G. BARTLETT (R-MD)	MICHAEL M. HONDA (D-CA)
VERNON J. EHLERS (R-MI)	BRAD MILLER (D-NC)
GIL GUTKNECHT (R-MN)	JIM MATHESON (D-UT)
JUDY BIGGERT (R-IL)	
TODD AKIN (R-MO)	
DAVE G. REICHERT (R-WA)	
JOE SCHWARZ (R-MI)	
MIKE MCCAUL (R-TX)	

Officials-in-Charge of Headquarters Offices (March 28, 2006)

Deputy Administrator/Ms. Dale
Associate Administrator/Mr. Geveden
Chief of Staff/Mr. Morrell
Deputy Chief of Staff and White House Liaison/Mr. Jezierski
Assistant Administrator for Security and Program Protection/Mr. Saleeba
Associate Administrator for Aeronautics Research Mission Directorate/Dr. Porter
Associate Administrator for Exploration Systems Mission Directorate/Dr. Horowitz
Associate Administrator for Institutions and Management/Mr. Luedtke (Acting)

- Assistant Administrator for Diversity and Equal Opportunity/Dr. Hayden-Watkins
- Assistant Administrator for Human Capital Management/Ms. Dawsey
- Assistant Administrator for Infrastructure and Administration/Ms. Dominguez (Acting)
- Assistant Administrator for Procurement/Mr. Luedtke
- Assistant Administrator for Small and Disadvantaged Business Utilization/Mr. Balinskas (Acting)
- Executive Director, NSSC/Mr. Arbuthnot

Associate Administrator for Program Analysis and Evaluation/Dr. Pace
Associate Administrator for Science Mission Directorate/Dr. Cleave
Associate Administrator for Space Operations Mission Directorate/Mr. Gerstenmaier
Chief Engineer/Mr. Scolese
Chief Financial Officer/Ms. Sykes
Chief Health and Medical Officer/Dr. Williams
Chief Information Officer/Ms. Dunnington
Chief Safety and Mission Assurance Officer/Mr. O'Connor
Chief of Strategic Communications/Mr. Davis

- Assistant Administrator for Education/Ms. Diaz (Acting)
- Assistant Administrator for External Relations/Mr. O'Brien
- Assistant Administrator for Legislative Affairs/Mr. Chase
- Assistant Administrator for Public Affairs/Mr. Mould

Director, Innovative Partnerships Program Office/Ms. McKenzie
Director, Integrated Enterprise Management Program/Mr. German
General Counsel/Mr. Wholley
Inspector General/Mr. Cobb

Directors, NASA Centers

Ames Research Center/Mr. Christensen (Acting)
Dryden Flight Research Center/Mr. Petersen
Glenn Research Center/Dr. Whitlow
Goddard Space Flight Center/Dr. Weiler
Jet Propulsion Laboratory/Dr. Elachi
Johnson Space Center/Mr. Coats
Kennedy Space Center/Mr. Kennedy
Langley Research Center/Ms. Roe

Marshall Space Flight Center/Mr. King
Stennis Space Center/Dr. Gilbrech

cc:
Assistant Associate Administrator/Ms. Johnson
Associate Deputy Administrator for Policy and Planning/Mr. Sterner
Director, Strategic Investments/Mr. Shank
Executive Secretariat/Mr. Box
Office of the Administrator/Ms. Hutchinson
Office of the Administrator/Ms. Mays
Office of the Administrator/Ms. Soper
Office of the Deputy Administrator/Dr. Spyke
Senior Advisor to the Deputy Administrator/Mr. Hopkins
Senior Advisor to the Deputy Administrator/Mr. Ralsky